

**METHOD AND APPARATUS FOR RAPID COOLDOWN
OF ANNEALED WAFER**

ABSTRACT OF THE DISCLOSURE

A method for annealing a semiconductor substrate. The method includes turning on at least one heat source, heating a semiconductor substrate in a chamber, turning off the at least one heat source, and cooling the semiconductor substrate in the chamber. The heating a semiconductor substrate includes absorbing an energy from the at least one heat source by the semiconductor substrate. Moreover, the cooling the semiconductor substrate includes flowing a first gas in a vicinity of at least one wall of the chamber, flowing a second gas in a vicinity of the at least one heat source, and flowing a third gas in a vicinity of the semiconductor substrate.

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